

## CLAIMS

1. A honeycomb filter for cleaning an exhaust gas which is a honeycomb filter for removing solid particles containing carbon as their main component in an exhaust  
5 gas, characterized in that the material for the honeycomb filter is an aluminum titanate sintered product obtained by firing at from 1,250 to 1,700°C a raw material mixture comprising:

10 100 parts by mass of a mixture (component X) comprising  $\text{TiO}_2$  and  $\text{Al}_2\text{O}_3$  in a molar ratio of the former/the latter being 40 to 60/60 to 40, and

from 1 to 10 parts by mass of an alkali feldspar represented by the empirical formula  $(\text{Na}_y\text{K}_{1-y})\text{AlSi}_3\text{O}_8$  (wherein  $0 \leq y \leq 1$ ), an oxide having a spinel structure  
15 containing Mg, or MgO or an Mg-containing compound which will be converted to MgO by firing (component Y).

2. The honeycomb filter for cleaning an exhaust gas according to Claim 1, wherein component Y is a mixture comprising the alkali feldspar represented by  $(\text{Na}_y\text{K}_{1-y})\text{AlSi}_3\text{O}_8$  (wherein  $0 \leq y \leq 1$ ), and the oxide of a spinel  
20 structure containing Mg and/or MgO or the Mg-containing compound which will be converted to MgO by firing.

3. The honeycomb filter for cleaning an exhaust gas according to Claim 1, wherein the honeycomb filter has a  
25 wall thickness of from 0.1 to 0.6 mm and a cell density of from 15 to 93 cells/cm<sup>2</sup>, wherein the porosity of the partition wall is from 30 to 70%, and the thermal

expansion coefficient is at most  $3.0 \times 10^{-6} \text{ K}^{-1}$ .

4. A process for producing a honeycomb filter for cleaning an exhaust gas, characterized by preparing a mixture comprising:

- 5        100 parts by mass of a mixture (component X) comprising  $\text{TiO}_2$  and  $\text{Al}_2\text{O}_3$  in a molar ratio of the former/the latter being 40 to 60/60 to 40, and  
from 1 to 10 parts by mass of an alkali feldspar represented by the empirical formula  $(\text{Na}_y\text{K}_{1-y})\text{AlSi}_3\text{O}_8$   
10        (wherein  $0 \leq y \leq 1$ ), an oxide having a spinel structure containing Mg, or MgO or an Mg-containing compound which will be converted to MgO by firing (component Y), adding molding assistants to the mixture, followed by kneading to plasticize the mixture to make it extrusion-  
15        processable, extrusion processing it into a honeycomb structure, followed by firing at from 1,250 to 1,700°C.

5. The process for producing a honeycomb filter for cleaning an exhaust gas according to Claim 4, wherein component Y is a mixture comprising the alkali feldspar  
20        represented by  $(\text{Na}_y\text{K}_{1-y})\text{AlSi}_3\text{O}_8$  (wherein  $0 \leq y \leq 1$ ), and the oxide of a spinel structure containing Mg and/or MgO or the Mg-containing compound which will be converted to MgO by firing.

6. An apparatus for cleaning an exhaust gas,  
25        characterized in that the honeycomb filter for cleaning an exhaust gas as defined in any one of Claims 1 to 3 is accommodated in a can.

7. The apparatus for cleaning an exhaust gas according to Claim 6, which is used for cleaning an exhaust gas of an automobile having a diesel engine mounted.